

# Streaming to Flash and iPhone with Wowza Media Server 2 Advanced

by Richard Lanham



## Flash and iPhone – Getting it all Together

The Flash player is undoubtedly the video king of the desktop. But in the mobile space that title belongs to the iPhone. With over 40 Million iPhone OS devices sold (including the iPod touch), and an estimated 65% of all mobile browsing volume, iPhone is becoming a hot screen that the content owners and publishers want to go after. But since Apple isn't offering the Flash player on the iPhone Safari browser, we're sure your customers are starting to ask *How do I get my Flash video to the iPhone?*

This tutorial discusses a unified model and provides step-by-step configurations that enable streaming to the Flash player and the iPhone with Wowza Media Server 2 Ad-

vanced software using the same H.264 video and AAC audio authored for Flash.

## What is Wowza Media Server 2 Advanced?

Wowza Media Server 2 Advanced is an extension of the proven Wowza Pro platform that takes streaming beyond Flash by adding support for:

- Apple iPhone and iPod touch
- Microsoft Silverlight
- Apple QuickTime
- IPTV set-top boxes

A unique feature of this server is the ability to stream to any *screen* with a single content encode. VOD files can be in any of the common

container formats (i.e., *.f4v*, *.mp4*, *.m4a*, *.mov*, *.mp4v*, *.3gp*, and *.3g2*), while H.264 live streams can be ingested from conventional off-the-shelf RTMP, RTSP/RTP or MPEG-TS encoders. The server performs necessary protocol conversion and content adaptation for the destination client. This tutorial will be focusing specifically on these aspects for live iPhone HTTP streaming and Flash RTMP delivery.

## Getting Started

To accomplish simultaneous streaming to both clients from a single live source, we are going to use Telestream Wirecast encoder version 3.5.4 and Wowza Media Server 2 Advanced preview 5 (or a later preview release; the final release of the server is scheduled for the Fall of 2009).

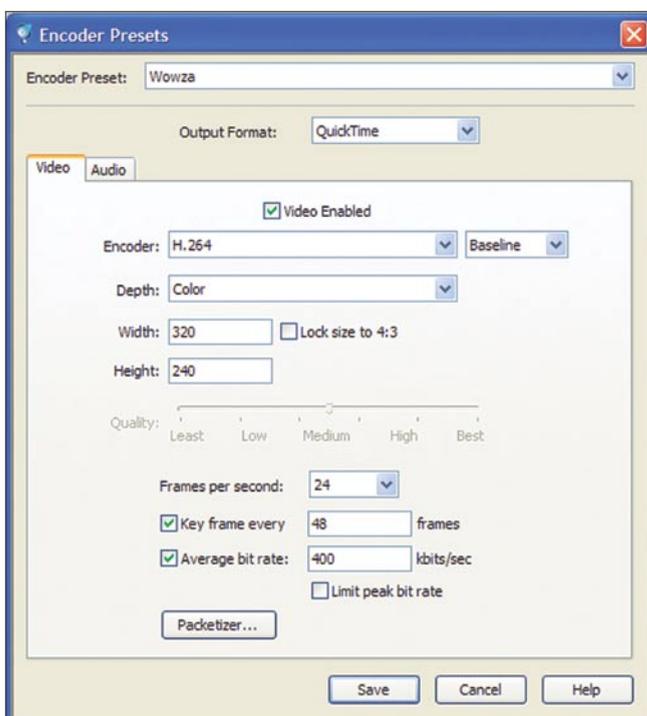


Figure 1. Wirecast video encoder settings

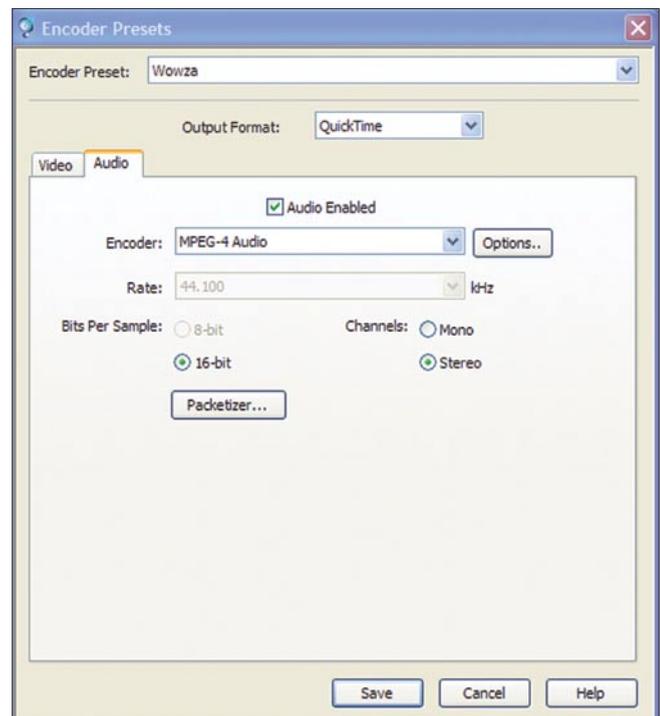


Figure 2. Wirecast audio encoder settings

We will do this in two steps:

- First we will set up the source stream using Wirecast
- Then setup a Wowza application that will allow us to view the live stream using the Flash player and the iPhone.

We will then show you how to make this application available for streaming to Silverlight (HTTP smooth streaming), which is similar in concept to the iPhone HTTP streaming.

Finally, we will discuss an approach to multi-bitrate streaming for both live and on-demand applications across Flash, iPhone and Silverlight.

### Setting Up Telestream Wirecast Encoder

Download Telestream Wirecast version 3.5.4 or later to your PC or Mac from: <http://www.telestream.net/wire-cast/overview.htm>.

We will use a RTSP stream from Wirecast for this tutorial.

- Startup Wirecast and click the thumbnail of your web camera in the media list
- Create a new H.264/AAC encoder preset
- Select the menu item Window: Encoder Presets
- From the Encoder Preset drop down menu select <New...>, enter a name for your preset (I used *Wowza*) and click OK
- Change the Output Format drop down to QuickTime
- Select the Video tab, change the Encoder drop down menu to H.264 and select *Baseline*, then change other settings as desired see (Figure 1).
- Select the Audio tab, change the Encoder drop down menu to MPEG-4 Audio and change any other settings as desired see (Figure 2).
- Click Save button
- Select the menu item Broadcast: Broadcast Settings...
- Change Encoder Preset drop down to the encoder preset *Wowza* that you created above.
- Change Destination drop down to Announce to QuickTime Streaming Server
- Change Host Name to [server-ip-address]:1935 (where [server-ip-address] is the ip address of the server running Wowza Media Server software)
- Change File Location to live/myStream.sdp
- Enter a username and password (we'll edit a password file in Wowza to match when we setup the Wowza application) see (Figure 3).
- Click *Save* button
- To broadcast to the Wowza server, select the menu item Broadcast: Network Broadcast: *Start All*

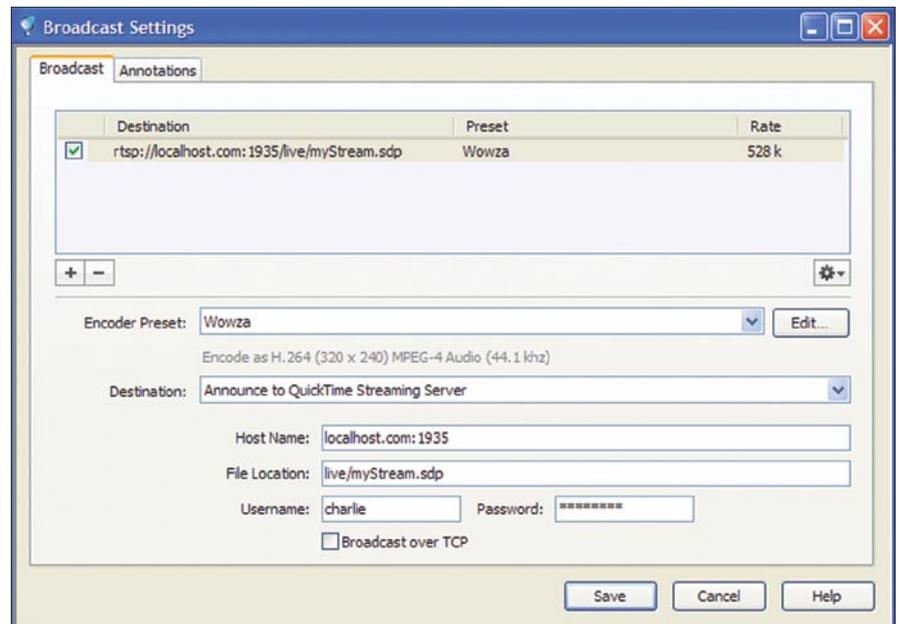


Figure 3. Wirecast stream broadcast settings

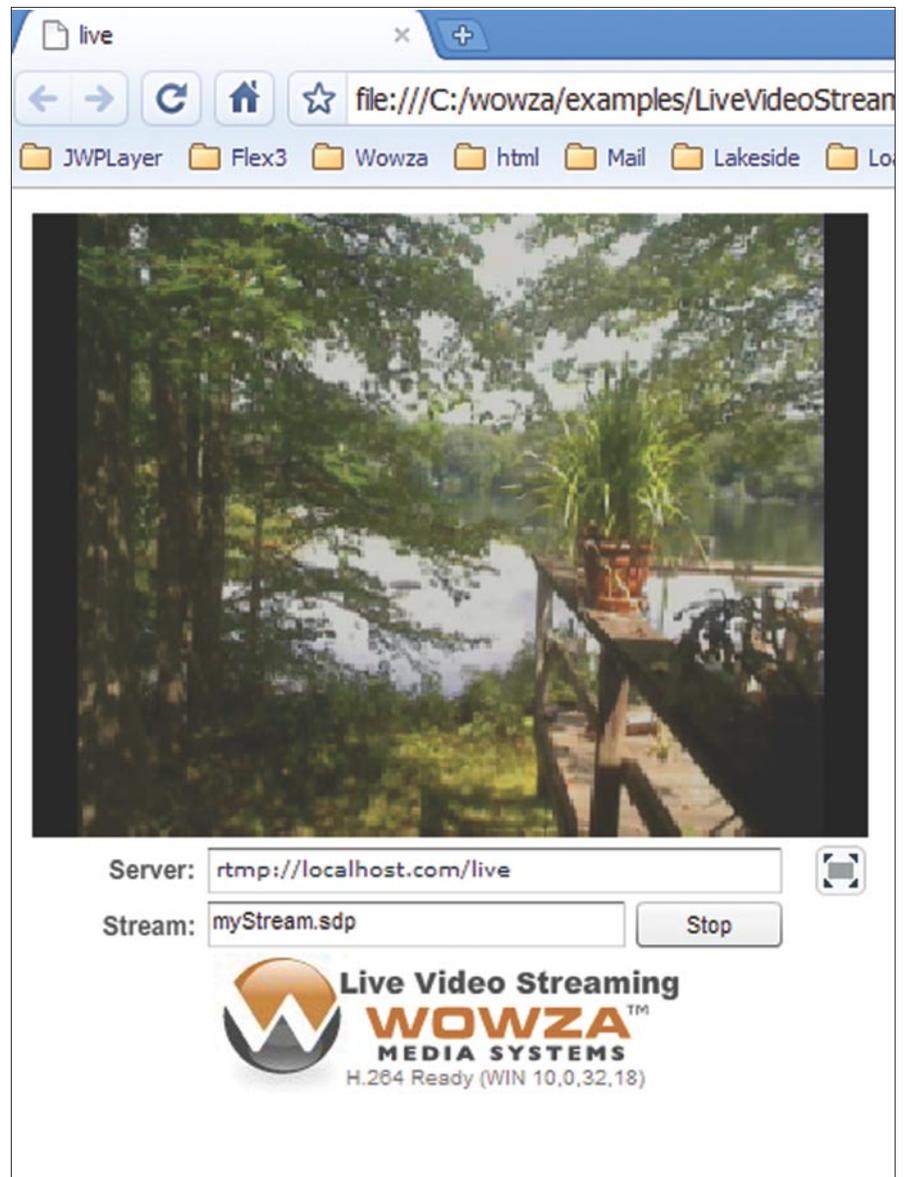


Figure 4. Wowza example live video streaming player

## Installing and Configuring Wowza Media Server 2 Advanced

Choose a Wowza Media Server 2 Advanced installer to download for your OS (Windows, Linux RPM, Linux DEB, etc.) from <http://www.wowzamedia.com/advanced.php>. You will need to request an evaluation license to complete the install.

Once installed, create a new Wowza Media Server application for live streaming. If they do not already exist, create these two folders:

```
[wowza-install-dir]/applications/live
[wowza-install-dir]/conf/live
```

Now copy this file:

```
[wowza-install-dir]/conf/Application.xml
```

To here:

```
[wowza-install-dir]/conf/live/
    Application.xml
```

Open the new file `/conf/live/Application.xml` in a text editor and make these changes:

- Change the Streams/StreamType to *live*:

```
<StreamType>live</StreamType>
```

- Change Streams/LiveStreamPacketizer to *cupertinostreamingpacketizer*:

```
<LiveStreamPacketizers>cupertinostreamingpacketizer</LiveStreamPacketizers>
```

- Add the following Properties to the /Streams /Properties section

```
<Property>
  <Name>sortPackets</Name>
  <Value>true</Value>
  <Type>Boolean</Type>
</Property>
```

```
<Property>
  <Name>sortBufferSize</Name>
  <Value>500</Value>
  <Type>Integer</Type>
</Property>
```

- Edit the file `[wowza-install-dir]/conf/rtp.password` and add a username and password to match the username and password used in Wirecast when setting up the broadcast.

```
#username password
charlie changeme
```

### Listing 1.

```
<?xml version="1.0" encoding="utf-8"?>
<access-policy>
  <cross-domain-access>
    <policy>
      <allow-from http-request-headers="*">
        <domain uri="*" />
      </allow-from>
      <grant-to>
        <resource path="/" include-subpaths="true" />
      </grant-to>
    </policy>
  </cross-domain-access>
</access-policy>
```

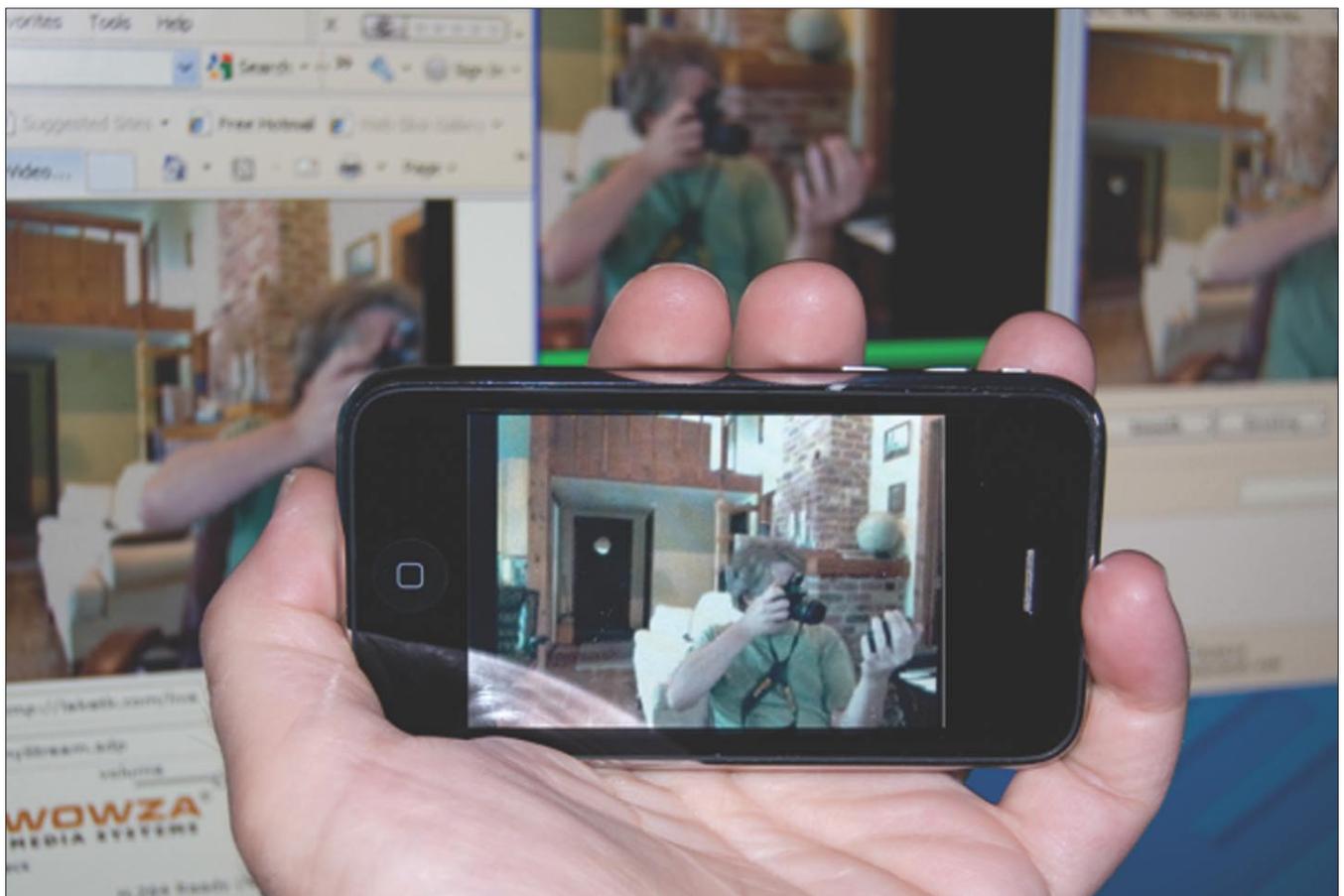


Figure 5. Streaming to all screens

Save those changes, and everything is now ready to view the live stream on Flash player and the iPhone.

## Starting to Stream

Start the Wowza server and the Wirecast broadcast. First we will view the stream in the Flash player. To do that, launch the Wowza LiveVideoStreaming example player, found in the `[wowza-install-dir]/examples/LiveVideoStreaming/client/live.html`.

Enter the Server and Stream information see (Figure 4):

- Server: `rtmp://[server-ip-address]/live`
- Stream: `myStream.sdp`

... and click *Play*. You not should see your live stream in the player. It may take 2 – 3 seconds for the stream to start and possibly longer if you are testing locally with Wirecast encoder on the same machine.

Now open the Safari browser on your iPhone or iPod touch and create a new bookmark see (Figure 5):

```
http://[server-ip-address]:1935/live/
myStream/playlist.m3u8
```

You will notice that it takes about 30 seconds for the live stream to be available on the iPhone/iPod touch. The delay is due to the way iPhone implements playback in the Safari browser. By default, Wowza Media Server 2 Advanced segmentation engine breaks down the content into 10 second *chunks*, which is what Apple recommends in the developers' guidelines. The Safari browser needs to buffer at least 3 *chunks* before the stream can be viewed on the device.

## Silverlight HTTP Smooth Streaming

Silverlight smooth streaming is very similar to iPhone HTTP streaming. Silverlight's approach to segmentation is somewhat different and, of course, you will need a Silverlight player.

Now, let's add Silverlight support to this same application you have created previously. It takes two steps:

- Open the `/conf/live/Application.xml` file in a text editor. Modify `/Streams /`

```
LiveStreamPacketizer to add smoothstreampacketizer
```

```
<LiveStreamPacketizers>cupertinostreamin
packetizer,smoothstreamingpacketizer
</LiveStreamPacketizers>
```

- Create `[wowza-install-dir]/conf/clientaccesspolicy.xml`. This is only necessary only if Silverlight player and Wowza Server are on different domains see (Listing 1).

To test this you will need to download a Silverlight Live Smooth Streaming player from here: <http://go.microsoft.com/?linkid=9656616>.

Once downloaded, do the following:

- Double click `Starter_Kit-IIS_Live_Smooth_Streaming_Beta.exe` to extract the player.
- Copy `Default.html` and `SampleLiveClient.xap` to your web server.
- Edit `Default.html` and change the `mediaSource` (line 82) to the url of your live stream:
  - `http://[server-ip-address]:1935/live/myStream.sdp/Manifest`
- Open a web browser and enter the url for the `Default.html` file and the stream should start playing see (Figure 6).

## Multiple Bitrate Streaming

Flash, iPhone and Silverlight all support the capability to dynamically switch between the same content encoded at different bitrates when the client bandwidth fluctuates. This provides a consistent flow of video to the client while the video quality may fluctuate according to available bandwidth.

Each technology uses a slightly different name for this capability. For example, in Flash it is referred to a *dynamic streaming*, while Silverlight calls it *smooth streaming*. Wowza Media Server 2 Advanced supports a generic model that works across all three client technologies. If you wish to experiment with this, visit the Wowza Media Server 2 Advanced section in Wowza forums at <http://www.wowzamedia.com/forums/forumdisplay.php?f=33>.

## RICHARD LANHAM

*Richard is an accomplished Flash and Flex developer and a streaming media enthusiast. He is currently a support engineer with Wowza Media Systems. Prior to joining Wowza, Richard was a principal at Lakeside consulting, a Flash/Flex development company he has founded.*

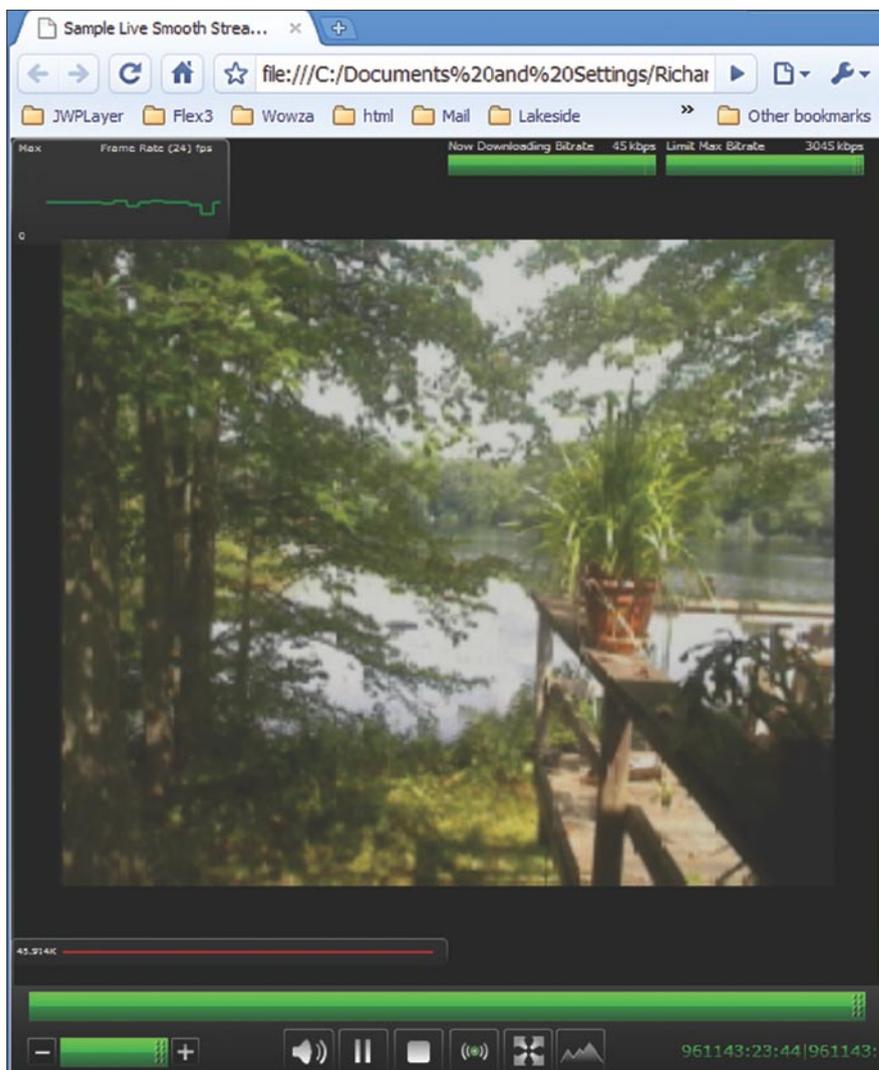


Figure 6. Silverlight smooth streaming player